

ADDENDUM TO PROPOSAL TO SUPPLEMENT  
US GOVERNMENT CONTRACT

Following conversations between the sponsor and cognizant personnel of the

it was agreed that a shift of emphasis in the proposed project was warranted. The revised orientation of the proposed research will be placed upon the utilization of an electric field by certain species of fresh water fish to navigate, orient and detect small objects as opposed to the original emphasis of phylogenetic comparisons of learning.

In recent years, there has been increasing interest in the sensitivity and response of various organisms to magnetic fields. This has been particularly true in the space program, where the effects of leaving the Earth's magnetic and gravitational fields on man's behavior and physiological processes may be of great importance. The magnetic field is a form of energy like light, heat, and sound, to which all plants and animals are exposed. Its influence on living systems, however, is subtle and not well understood.

One potentially useful approach to studying the effects of magnetic fields upon behavior is through the use of an organism which produces an electrical field and uses it as a detection and navigation mechanism. The electric fish Sternarchus albifrons is such an organism. Impulses are discharged from the fish's tail and received by its head, which becomes positive with regard to the tail. This difference creates a field about the fish's body, permitting it to detect objects through their distortion of the field. The purpose of the present study will be to determine how Sternarchus orients itself, in terms of its own field, within a magnetic field created by the experimenters, and whether this affects its ability to detect objects of varying conductivity.

In essence, the primary goal of this effort will be a study of electric fish behavior with particular reference to: (a) measurement and characterization of the electric fields produced; (b) influence of behavior and electric field by an artificially produced field which interferes with the natural field produced by the fish; and (c) the use of the fishes' electric field for navigation, orientation, object detection and discrimination.

This addendum to the original proposal will not affect the total funds, manpower and equipment required nor will it nullify